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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,979	09/30/2002	Oleg N Zege		4096

7590 04/11/2006

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EXAMINER	
SINGH, PREM C	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 04/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,979	ZEGE ET AL.	
	Examiner	Art Unit	
	Prem C. Singh	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 2 is objected to because of the following informalities:

The first entry on Line 18 of page 8 is not clear.

Appropriate correction is required.

Claim 4 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). The claim 4 should mention "A method in accordance with either claim 1 or 3".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gebert et al (DE 3442980 A1) in view of Bencini et al (US Patent 5,866,738) and further in view of Wilcox et al (US Patent 5,942,127) and Nottes et al (US Patent 3,053,756).

Gebert invention discloses a mechanism for filtering and preheating diesel fuel, in particular from combustion engines. From DE-OS 2841249, a method is well known for filtering diesel fuel, with which into the cooling circuit of switched heat exchangers for

preheating the fuel is used, whereby this is supplied via separated temperature-steered valve in the cooling circuit. On the basis of these well known remarks, this invention is the basis to create a mechanism for filtering and preheating a diesel fuel in combination with preliminary heating of the diesel fuel by simple arrangement and structural simplification of the rule units (English Translation: Page 1).

Figure 1 shows the schematic diagram of the setup and figure 2 shows the details of the rule unit. Figure 3 is the plan view of rule unit shown in figure 2 (English Translation: Page 2).

Gebert invention further discloses a mechanism for filtering and preheating diesel fuel for a combustion engine which covers a filter (1), a rule unit (2), an injection pump (3) with integrated feed pump (4) in accordance with Figure 1 and injection nozzle (5), a tank (6), and a water cooler (7). At a filter head the filter element containing filter housing (9), still another heat exchanger (10) and a PTC heating (11) exhibits (8) fastened filter (1) with a thermal relay (12). A fuel pipe (13) leads from the tank to the filter head (8), from there as (14) to the rule unit (2), from which first line ends (17) back before the filter (1) in the fuel pipe (13) and second (18) back in the tank (6) (English Translation: Page 2).

Gebert invention also discloses that the rule unit (2) in accordance with Figure 2 possesses a two-piece housing (23) which exits out by ultrasonic sealing connecting (24) and (25). There is a diaphragm (26) which separates the areas (28) and (29). The housing (23) of the rule unit (2) exhibits the following pipe unions for the connection of the individual lines of the cooling water cycle and the fuel cycle. A connecting piece (14

A) makes the connection between rule unit (2) and filter head (8) with the fuel pipe (14). For the definition of the river direction water and fuel stream connecting the respective discharge parts, of the occurring the rule unit (2) appropriate pistons (39), (40), (41) are rigidly connected with the piston rod, whereby the piston (39) steers the flow, of the surplus diesel fuel flowing back from the injection pump and the pistons (40), (41) as single piston arrangement (English Translation: Page 2).

Gebert invention further discloses that by such a mechanism a fast heating up of the diesel fuel reaches, whereby requirements of electric current are kept very small. In addition by the common rule unit and the adaptation of the heating mechanisms with the filter a constructionally simple unit is reached (English Translation: Page 3).

Gebert invention does not disclose rotor-disc type vortex apparatus with conical trays having destruction edge.

Gebert invention does not disclose additional filtration by multifunctional catalysts, alkylating aromatic compounds, and a layer of a fill of powder of transitional metals.

Bencini invention discloses a process for the alkylation of aromatic compounds, carried out in the presence of a solid catalyst (Column 1, lines 11-13). The process comprises contacting an olefin with an aromatic hydrocarbon in the presence of a zeolite and under conventional operating conditions, characterized in that the aromatic hydrocarbon, before the alkylation, is:

(a) treated to eliminate the oxygen dissolved therein; and/or

(b) percolated through a fixed bed consisting of particles of alumina modified with silver (Column 1, lines 44-53). In particular, an alumina modified with 5-7% of silver can be used having an essentially spherical form and with a particle diameter varying from 2 to 4 mm (Column 2, lines 45-47). The reaction temperature is between 100 to 300°C whereas the pressure is between 5 and 50 bars (Column 3, lines 1-4). Any zeolite able to provide a catalytic activity in the alkylation reaction of aromatic hydrocarbons can be used in the present invention. Examples are Y or beta zeolites (Column 3, lines 9-11).

Wilcox invention discloses that it has been found advantageous to agitate the fuel oil being heated, to assist, it is thought, in the weakening of molecular bonding between the constituents of the fuel oil and at least some of the contaminants contained therein. Such agitation may be effected by precision engineering the means for heating the fuel oil and by pressurization thereof, at least the latter being effected by, say, a suitable pump, such as a hydraulic pump, and/or by other agitating means, such as baffles or fins, in at least part of the path of the fuel oil being heated (Column 2, lines 52-61). After heating the fuel oil and the resulting the volatilization of at least some of the contaminants contained therein, filtering of the previously heated fuel oil is carried out, preferably initially catalytically, for example, by a catalytic metal strainer, preferably in the form of a woven nickel-copper mesh having, preferably, a porosity in the range of 5 to 10 microns (Column 2, lines 62-67; column 3, line1). Additionally or alternatively, but preferably the former, a mechanical filter is provided operationally downstream of

the catalytic filter (Column 3, lines 11-13). Preferably, the pore size of the mechanical filter is 3 microns to 0.3 microns (Column 3, lines 15-17). The preferred material of the mechanical filter is polypropylene, such as may be provided in cartridge form (Column 3, lines 23-24).

Nottes invention discloses a method to refine industrial hydrocarbon mixtures such as gasoline, diesel oils, fuel oils, lubricating oils and the like with oxygen containing gases and which are soluble in hydrocarbons, by using as catalyst an organo-metallic compound of the type Mea(R)x(CO)y, in which Me represents a metal, selected from the class consisting of metals of roups VI A, VII A, and VIII of the periodic system, a is a whole number from 1 to 4, R is an aromatic ligand, x is one of the numbers from 1 to 5, and y is one of the numbers from 0 to 9 (Column 1, lines 42-52). The separation of the precipitates may be effected in a manner known per se by sedimentation, decantation, filtration, centrifuging, distillation or the like (Column 2, lines 8-10). The refined product may be after-treated in manner known per se with active carbon or bleaching earths (Column 2, lines 19-20).

It would have been obvious to one skilled in the art at the time the invention was made to use conical trays with destruction edge for a better mixing and shearing effect on the diesel fuel.

It would have been obvious to one skilled in the art at the time the invention was made to combine Gebert, Bencini, Wilcox, and Nottes inventions and have additional

filtration by multifunctional catalysts. It would have been obvious to include catalyst components alkylating the aromatics to remove unsaturated compounds from the diesel fuel. It would have been obvious to use a layer of transitional metals to refine diesel.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gebert et al (DE 3442980 A1) in view of Bencini et al (US Patent 5,866,738), Wilcox et al (US Patent 5,942,127), and Nottes et al (US Patent 3,053,756) and further in view of Weisgerber et al (US Patent 3,014,793).

Gebert invention does not disclose the addition of stabilizing additives.

Weisgerber invention pertains to the stabilizing of petroleum oils against the formation and precipitation of sediment in storage. The invention relates to petroleum fuel oils and particularly to fuel oils known in the petroleum industry as gas oils, which are petroleum distillates intermediate in volatility between kerosene and lubricating oil and which are used as fuel in domestic heating furnace and in diesel engines (Column 1, lines 9-16). The invention is further concerned with fuel oil compositions containing said primary amines and also small amounts of surface active compounds such as oil-soluble phosphates, alkyl phenol sulfides, sulfonates, naphthenates, amino-phosphatides and phospho-sulfurized petroleum hydrocarbons (Column 1, lines 30-35).

It would have been obvious to one skilled in the art at the time the invention was made to combine Gebert, Bencini, Wilcox, Nottes, and Weisgerber inventions and add stabilizing agents in the diesel fuel for an enhanced storage life.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Navaree et al, US Patent 5,681,483.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ps/032906

Walter D. Griffin
Primary Examiner